

From: [Hodge, Frances \[USA\]](#)
To: [Mikulka, Michael](#)
Cc: [Benchouk, Michele \[USA\]](#)
Subject: RE: [External] This is what I was asking about
Date: Tuesday, March 08, 2016 10:36:24 AM
Attachments: [image002.png](#)

Hi Mike,

We had briefly looked at this issue when we looked at the Pre-Design Work Plan back in December 2015 (the memo is Attachment 3 to that plan). Looking more closely, we verified the numbers used in the various calculations with historic data from reports we have on hand and then went through the analyses used in deriving the groundwater discharge volume and the dilution factor.

The use of 25% of the surface water design flow is provided for in the regulations (327 IAC 5-2-11.4) when deriving dilution factors for constituent concentration comparison against chronic ecological criteria. Considerations for acute toxicity (in the same section of the regulations) do not include calculation of dilution factors. In other state programs however (e.g., WAC 173-201A-400(8)(a)(ii)), dilution factors associated with acute criteria are based on use of 2.5% of the surface water design flow. If ArcelorMittal were to follow this example, the dilution factor for consideration of acute toxicity would be 325.

Assuming that the currently derived dilution factor would be limited to evaluation of chronic ecological criteria, the calculations themselves appear to be conservative and biased toward a higher groundwater discharge volume and, consequently, a smaller dilution factor. For example, the length of the breached sheet pile area accounts for the entire length of the wall, even where it runs parallel to the direction of groundwater flow and would presumably be subject to reduced discharge. Although very conservative, this assumption appears to be relatively reasonable and supportable.

The calculations also assume that a certain amount of groundwater leaks through the sheet pile revetments. Rather than use the modeled hydraulic conductivity of the sheet pile (0.0014 feet per day), ArcelorMittal's contractor assumes that conductivity of the sheet pile wall is approximately 10% of the hydraulic conductivity of the aquifer sands through which discharge occurs in the breached area (8.8 feet per day). The memo provides no justification for this relatively high hydraulic conductivity value for the sheet pile wall. Although this value increases the calculated discharge volume and reduces the dilution factor significantly, it may not be prudent for EPA to put on record the assumption that so much groundwater is passing through the sheet pile wall. It may have the unintended impact of making stakeholders question the veracity of the pile in maintaining hydraulic control.

Otherwise, the approach used is acceptable, and the dilution factor is conservative in representing what is going on as groundwater discharges into surface water. The resultant concentrations should be limited to assessment of chronic ecological toxicity.

Let me know if you have any questions.

Thanks,

Francie Hodge
Associate



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From: Mikulka, Michael [mailto:mikulka.michael@epa.gov]

Sent: Monday, February 29, 2016 4:02 PM

To: Hodge, Frances [USA] <hodge_frances@bah.com>

Subject: [External] This is what I was asking about

In the voice mail I left you last week. ArcelorMittal is essentially proposing a dilution factor of 3,250, based on a groundwater discharge of less than .05 cfs compared to a surface water dilution flow of 162 cfs (25% of the stream mean annual discharge of 647 cfs).

What are your thoughts on that?

Mike Mikulka
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